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THE RELATIONSHIP BETWEEN GLOBALIZATION AND PUBLIC SPENDING: EMPIRICAL EVIDENCE FROM THE NORDIC COUNTRIES

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ABSTRACT

The threat of globalization to public spending as well as a fiscal debate of the disciplining hypothesis and compensation hypothesis on large sample of countries, have been widely analyzed in the public finance literature. Yet the welfare states in Nordic countries with largest share of public expenditures have never been singled out for similar studies. This study employs a much more detailed government classification of public expenditures (COFOG), to investigate the impact of globalization on the composition of expenditures in Nordic countries from 1990-2007. Several measures of globalization are shown to affect some of the expenditures categories but not in a notable way. Further aggregating the expenditure categories into productive and unproductive expenditures, in order to find out whether it is the efficiency or compensation hypothesis that prevails in the Nordic countries. This study finds a slight support for the efficiency hypothesis over the compensation view.

KEY WORDS: Globalization, public spending, efficiency and compensation hypothesis, Nordic countries.

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Contents

DEDICATION

To my late father, papa Tanyi Saahdong,

Of Mmouck leteh in Cameroon.

CHAPTER 1

INTRODUCTION

Globalization in the past few decades has accelerated economic integration among nations as the flow of capital, labour, technology, goods and services across boundaries have increased. This trend in the global economy is expected to enhance efficiency and stimulate growth; but it has rather become a threat to many nations. This is because globalization results to lost of power of nation states, and reduces welfare activities as economic integration increase. In addition, increase globalization due to factor mobility can increase competition, which may have great consequences on the spending pattern of welfare states (Sinn, 2002 and Tanzi, 2002). Thus researchers, politicians, and economists, seem worries of its likely impact on public expenditures. This fear has thus tilted attention to fiscal competition and a need to analyse the impact of globalization on public spending has grown.

Thus much of globalization literature abound with fiscal competition has ignited a debate viewed in terms of 'Efficiency' and 'Compensation' thesis (Busemeyer, 2008). The compensation hypothesis argues that globalization leads to pressure on governments to expand public expenditure, specifically by increasing expenditures on social protection (unproductive expenditure) for the purpose of compensating the losers. On the contrary the efficiency hypothesis, argues that globalization leads to a reduction in the size of public sector through tax constraints and to restructuring of composition of government expenditure towards productive inputs as government compete to attract more foreign direct investment (FDI).

This paper aims at determining how globalization affects the detailed categories of public spending and which of the fiscal competition debate strand, dominates public spending in the Nordic countries. The main issues here are that Comprehensive studies analysing the effects of globalization on the shift of public spending using dis-aggregated data are rare. Beside the well known fiscal competition debate with theoretical claim that relates to redistribution problem or transfer is not explicit on which one of these two hypotheses dominates public

spending decision (Busemeyer, 2008). Yet, no particular study of these issues has been done on the Nordic countries.

Most of the existing literature analysing the impact of globalization on government spending used aggregated data (Rodrik, 1997, 1998; Garrett, 1999; Busemeyer, 2008; Garrett/Mitchell, 2001 etc) see Schulze and Urprang (1999) for detailed literature review on the issue. This also applies to the numerous studies on integration and public spending (Hansson and Olofsdotter, 2006; Merchand and Keen 1997; Quinn 1997, Hick and Swank 1992). These studies have been done on large sample of countries with no specific focus on the Nordic countries. However few studies have examined the impact of globalization using dis-aggregated data of the 10 categories of public spending (COFOG)[1] composition. For instance Dreher et al, (2008) find no significance effect. Regards to fiscal competition debate some of the studies have come out with positive evidence in support of the 'efficiency hypothesis' and others in support of the 'compensation hypothesis' while others are inconclusive. None of these existing studies have actually shown the dominance of one of the hypothesis over the other. The Nordic countries with the largest share of public spending may provide sample to assess, how globalization affects public expenditures, as well as public decision of spending in respect to the compensation and the efficiency hypothesis. In addition to the fact, no empirical studies of the said research gap have focused specifically on the Nordic countries motivated the choice of this study.

The sample of this study consists of only four countries (Denmark, Sweden, Norway and Finland) from both the Scandinavian and Nordic countries, which are referred to in this work as the Nordic countries. These Nordic countries noted with highest public expenditures (social spending in particularly) make the study important. The benefit of this study is not only to review how globalization influences public spending policy in Nordic countries, but also a contribution to knowledge in the literature.

In order to assess the impact of globalization on the 10 categories (composition) of public spending, an empirical econometric model has been specified. As regards the domination of

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[1] The 10 categories of classification of function of governments(COFOG) include: general public services , Public order and safety , economic affairs, Environmental protection, Housing and community amenities, Health, Recreation, culture and religious; Education, and Social protection.

the two hypotheses in terms of compensation and efficiency, the 10 detail expenditures categories are re-classified into productive and unproductive spending. Similar regressions are run for the two groups of expenditures to determine which of the two spending views dominates.

The study period span from 1990 to 2007 based on data availability on the 10 new categories of public expenditures (COFOG). In addition, the lack of detailed data on each of the expenditure categories makes it difficult to classify the expenditures into productive and unproductive components in order to investigate which hypotheses dominate. Moreover it is hard to capture the interaction effects even in the presence of dis-aggregated data in the analysis. This is because each category of public expenditure shares some common features of benefit, that can be attributed to both the efficiency and the compensation claims. Hence a sensitivity analysis was used in the study.

The paper is organized as follow: chapter 2 reviews the literature, and the trend of variables development used in the study over the past two decades in chapter 3. Chapter 4 is the Presentation of the model specification while the last two chapters present the results of the regressions and the conclusion.

CHAPTER 2

2.0: LITERATURE REVIEW

The literature on globalization can be divided into 2 categories. The first strand is rooted from trade and wages literature and emphasises the effects of globalization on distribution of labour and capital. The second strand is developed by political scientists and economists who focuses on the indirect effects of globalization that induce changes in government activities. Schulze and Ursprang (1991) pointed out that, such indirect effects cause similar and equal distortions in the labour markets. In the second strand which is the focus of this paper have the empirical review of the literature here divided into three parts; the first part covers a brief review of the theoretical framework of the research issues. The second part is the review of past studies on how globalization affects the composition of public expenditures. The last part consists of empirical evidence on past studies that which find supports for the compensation and efficiency hypotheses, as well as those with no supports for either of the two.

2.1: THEORY OF GLOBALIZATION AND PUBLIC SPENDING

There exist diverse theoretical predictions of the impact of globalization on public spending, depending on the eclectic approaches used. Turning to the expenditure side of fiscal policy which is the focus of this study, the political and non-political theories of fiscal policy setting can be distinguished (Schulze and Ursprang, 1991). The political model assesses how globalization through global economic integration can influences public spending – pointing out the self interest of policy makers as a driving force of public spending. On the other hand the political models are based on standard consumer theory with government's ultimate aim to maximize welfare.

The non political paradigms, consider the utility maximization constraints like input prices, income, preferences, population size and taxation, has the literature strand of taxation the most well developed. This has basically been dominated by the tax competition models which predict a downward pressure on tax revenues as government compete by reducing tax rate in

order to avoid the out flow of it mobile factors (e.g Wildasin, 1988, Zodrov& Mierszkowski, 1999). This prediction of tax competition is important as they subsequently predict a sub optimal provision of public spending. Surprisingly, such a race to the bottom has not occurred. Thus tax revenue has not fallen as expected due to broadening of tax bases in different countries. This intensify the believe that globalization with increased factor mobility creates positive externalities. This has help in accelerating government incentive to attract the mobile factors. Thus globalization theory expects an increased in productive categories of public spending like infrastructures, public order and safety, education, health, economic affairs, that attract capital and skilled labour. It is this tendency of increasing supply of such categories of productive spending that is referred here as the efficiency view. The model developed by Keen & Marchand (1997) helps distinguish between this type of productive expenditures that attract mobile factors and those with social character with redistributive aims (unproductive spending). However other economists seeking to estimate the impact of public spending on economic growth have also model such a distinction (e.g Kneller et al, (1999), Barro-i-Martin (1995) and Deverajan et al,(1996). One other interesting prediction aspect from the Keen & Marchand model in milieu of tax competition is that expenditure on productive spending increased at the expense of those on social spending. Similar stories on economic integration of declining social spending have also been confirmed by Lejour (1995) and Tanzi (2002). The growth models that predict a convergence of public spending among countries are also important as they point to diminishing return on government expenditures in their traditional settings. For instance Barro (1990) in a dynamic endogenous growth model, show that they will be a convergence of government spending between similar countries with growth maximizing objective.

Turning to the political model framework that focuses on the use of public spending for redistribution than on welfare enhancement, it is difficult to make a precise prediction as a variety of such models exists. However on the overall public expenditure it suggests that globalization of economies may result in a reduction in growth as well as government spending (Schulze and Ursprang, 1999). Such tentative conclusion is justified on the ground that the interest of decision makers can be explicitly analysed and median voters that suffer

from income inequality or whose income fall below the average income will demand more transfers and large public sector. In respect to models focusing on political failures, integration may rather reduce public spending (Hansson & Olofsdotter, 2006). This may also reduce the state monopoly power. On the whole economic –political framework prediction are characterized by uncertainty and it is believed that as globalisation increases, such uncertainty increases and so does the demand for social protection and redistribution arises. It is the view that is referred to as the compensation hypothesis.

As globalisation transpires, theoretically, it is impossible to predict whether the compensation or efficiency view dominates and it is hence up to empirical work to determine which of the two overshadow public spending policy in the Nordic countries.

2.2: COMPOSITION OF GOVERNMENT SPENDING

The issue of how globalization affects public spending has been addressed from two main perspectives: the size and the pattern of government spending. This section is concerned with the empirical review of the impact of globalization on the categories of public spending. Empirical studies that had used aggregated as well as dis-aggregated data are analysed.

Cross countries empirical studies using aggregated data on large samples found no significant negative impact of globalization on public spending. For instance, Garrett and Mitchell (2001) used aggregated data for the OECD countries, with total trade, imports from low wage economies, FDI, and financial market to measures the globalisation. They realised that year-to- year increases in trade and financial openness in the past three decades resulted in less public spending, while the global market effects of financial capital taxation shows positive results on welfare states. Their outcomes contradict that of the previous studies who basically found a neutral result. Thus Kittel and Winner (2005) and Plumber et al (2005) rejected the result of Mitchell and Garrett base on econometric specification. They however concluded that globalization in terms of international openness have no influence on public spending. Their view is somehow consistent with Iversen and Cusack (2000) who in their cross countries studies of 15 OECD, showed that the main increase in the welfare state spending as transfers and consumptions are not due to globalization but to deindustrialisation.

Also using ingenious novel measures of openness that correct for countries size, Bretschger and Hettich, (2002) noted that globalization have negative and significant impact on corporate income taxes which tends to raise labour taxes. In a further analysis they also realised that it increased social spending, which signified increased compensation over efficiency.

With respect to empirical studies that used dis-aggregated data mostly on social expenditure; Huber et al (1993), Garrett (1995), Cusack (1997), Rodrik (1998) are noted. They do not consider all the 10 categories of public spending anyways, and focus only on larger sample of countries than the Nordic countries as in this study. Schulze and Ursprang (1991), survey of their econometric approaches results at aggregate level, find none in support of any negative relationship between globalization and a country's ability of conducting independent fiscal policies.

Dreher et al (2008) used dis- aggregated data on all the 10 categories of the COFOG classification   of public spending on OECD countries, to find how globalization affect each category. With trade, kofindex of globalisation, capital liberalisation and foreign direct investment as measures of globalisation, with recent ingenious refined methods they realised no significant impact of globalisation on public spending category.   Thus can similar investigation on Nordic countries yield a different result? Is an issue that will be investigated by this study.

2.3: COMPENSATION AND EFFICIENCY REVIEW

The literatures on the effects of globalization on the composition of public spending often result into two competing hypothesis:

a) Efficiency hypothesis
b) Compensation hypothesis

The efficiency hypothesis favour private/public productive spending inputs such as education, training, research and development (R&D) and infrastructures. Such productive inputs do encourage international mobility of capital and income taxpayers to moves to region of better opportunities (Tanzi, 2000, Oates 1995). Though the inflow of such capital

and labour is at the expense of lower tax rates, they may enlarge and broaden the countries tax bases.

The compensation hypothesis on the other hand exerts upward pressure on the demand side of government budget. It occurs as citizen's demand for social protection from their government increase to mitigate against exposure to external risks of globalization. As pointed out by Ruggie, (1983) governments adopt social programs to compensate individuals for accepting high trade exposure risk. This work does not completely agree with Ruggie's view, for most welfare states maximize utility for the wellbeing of the entire community and to reduce inequality than just risk protection. The empirical review evidence of compensation and efficiency hypothesis due to globalization will be presented in three parts: First are studies with evidence in supports of the efficiency hypothesis, followed by those that supports compensation hypothesis and finally studies with neutral outcomes.

2.3.1: STUDIES SUPPORTING EFFICIENCY HYPOTHESIS.

Alesina & Wacziarg,(1998) in a cross country study of 137 developed and developing countries, investigate how globalization affects government consumption, defence, education, and public investment as a share of GDP. Using trade openness as a globalisation measure they find a negative relation of country size relative to government size and trade openness. Their result is consistent to the efficiency hypothesis that supports a reduction in government spending. Rodrik,(1997) time series cross section examination of 19 OECD countries from 1966-1991, with government consumption, as a share of GDP, in addition to trade liberalisation and trade openness as a measures of globalisation, realised a negative result, that is in line with the efficiency view. Similarly Cusack (1997) using same time series cross section data of 17 OECD countries but he measured spending as growth of government expenditure net of defence, and globalization from international financial integration perspective yielded to same negative outcome that supports the efficiency thesis.

The effect of globalisation using foreign direct investment on local communities has also been examined. Figlio Blonigen, (2000) employed a time series cross-section that consists of detailed counties- level panel data from South Carolina, across 5 years intervals from 1980 through 1995 to examine the effects of FDI on local communities. With per capita local

expenditures and revenue, per pupil expenditure on education, public safety and transportation expenditure as a share of local spending and foreign manufacturing employment as measure of globalisation. Focusing on South Carolina counties they realised that foreign investment has considerable effects on local communities than domestic investment, wherein foreign plants do not only pay higher wages to workers but reduce substantially per capita government budget. Moreover they find evidence that communities with more foreign investment tend to substitute from education spending to transport and public safety. This is somehow in line with the efficiency hypothesis, but the only loophole of their study is that, they could not provide evidence of the realised higher wages in local communities associated with more foreign plants.

Garrett & Mitchell(2001) employed a dynamic time series cross section econometric model, of 19 OECD countries from 1973-1997 to investigate how globalisation through trade openness, FDI inflow and outflow, imports from low wage countries, capital liberalisation index and covered interest rate differential affect aggregate government expenditures, consumption and social security as a share of GDP. Their result which seems to be consistent with the efficiency hypothesis, show that trade openness negatively affected total public government expenditure, public consumption and social security spending. Capital mobility and low wage import did not result to any significant impact on total public spending. Kittel & Winner (2005) in another dynamic time series of 17 OECD countries from 1961-1993 realised that FDI reduces the total public size that is total government expenditures as a share of GDP, which again is in line with the efficiency thesis, while trade openness and import from low wage countries have no effect. Other dynamic time series studies on 14 Latin American countries by Kaufman & Seguira-Ubiergo, (2001), have also found evidence in support of the efficiency view.

2.3.2: STUDIES SUPPORTING COMPENSATION HYPOTHESIS.
Those with evidence in support of the compensating hypothesis, which increased social spending; include, the works of Huber et al (1993); Garrett (1995), Quinn (1997); Adsera & Boix (2002); Bretschger & Hettich (2002); Hick &Swank (1992), Swank,(2001). For example, Huber et al (1993), use cross section time series analysis of 17 OECD countries

14

from 1956-1988, with trade openness as globalisation variables and realised a positive increase in social welfare and total government revenues when used as a share of GDP for public spending. Garrett (1995) who uses a dynamic econometric time series model on a sample of 15 OECD countries from 1957-1990, find that globalization that interacted with partisan variable increase government expenditures.

In a similar vein, cross section studies of both a series of developed and developing countries, on how globalisation affected government expenditure, Quinn (1997) and Rodrik (1998) find positive results which are consistent with the compensation hypothesis. Rodrik (1998) claimed that countries with more trade are subject to larger and more frequent external shocks. By considering capital mobility Garrett (1998) argues that globalization increases social dislocation and economic insecurity and hence, individuals' pressure on government to circumvent or shield them from such market dislocations.

Most empirical tests of globalization impact on public spending has proceeded by testing whether the total or particular categories of government spending are positively or negatively affected by one or more of the globalization measures. As can be seen, government spending measures most tested in the literatures are the total government expenditures and the social welfare expenditures expressed as percentages of GDP. Other empirical works not discuss so far that have also find supports of the compensation hypothesis include, Adsera &Boix (2002); Bretschger & Hettich (2002); Hick &Swank (1992), Swank,(2001).

To test for the net effects of globalization on composition of government expenditures both the efficiency and compensation hypothesis have been encompassed within the same model (Gemmell et al, 2006). Hence Gemmell et al (2006), find no supporting evidence of the two hypotheses on the overall size of government but a strong or dominant support of the compensation hypothesis on the mix of spending on OECD countries. In these models, the ability to increase social welfare and productive spending by countries to attract FDI is undermined by potential loss of the tax base needed to finance the expenditure. As implied by Lejour, (1995) countries with more generous social welfare system will attract more individuals while net contributors leave due to increase costs (taxes). This model expanded by Keen and Marchand (1997) pointed out that countries which increase their productive

spending unilaterally raise their private capital inflow and widen their tax bases while at same time penalising other trading partners. Hence in the absence of cooperative equilibrium level, the impact of globalization on public spending composition can be really imperfect. This may result in a situation of declining social spending at the expense of increases in productive spending, an issue emphasized by Lejour (1995) and Tanzi (2002).

2.3.3:   STUDIES WITH NO SUPPORT OF THE TWO HYPOTHESES.

Dreher (2006) and Dreher et al (2008) are the exception that finds neither of the two hypotheses prevailing hence no conclusion reached. Even when Dreher et al, (2008) employed the more detailed classification of the 10 public expenditure categories did not find any notable influence of globalization on the composition of public spending.

A summary of the above reviews have resulted in an ambiguous conclusion, consistent with Schulze and Ursprung's (1999), survey of a number of econometric studies on this topic at aggregate level. They found that studies supporting efficiency hypothesis are closely balanced by those supporting the compensation hypothesis. Thus they remarked that there is inconclusiveness of the results on this subject. Whether the differences in the findings of the past empirical investigations of these problems lies in the empirical methodologies employed by the studies or are due to the interaction effects of the two hypothesis that tend to neutralised each other as justified in Dreher et al, (2008) is uncertain. (What can be the outcome of a similar enquiry on the Nordic countries?). To argue in line of this view we see that no evidence of the race to the bottom has occurred. In addition there has been no shift in tax burden from capital to labour. Still in respect to the expenditure neither any surprise, evidence of inducing changes in the level of public spending nor on accustomed expenditure patterns have occurred in the course of globalisation.

As remarked above, such observed outcomes may be due to lack of studies using disaggregated public expenditure data, an aspect of challenge to be embrace by this study with evidence using the Nordic sample. As the objective of the paper remain to investigates how globalization affect the shift in the 10 categories of public spending and to test which of

the two debatable hypotheses dominate public spending in the Nordic countries. As there has been no indication of which of the two schools of thoughts exert more influence on government spending decision. However, the choice of sample of countries is relatively small when compared to past studies with larger samples. This current study employed similar approaches especially the current empirical specification of analysing the relationship between globalization and public spending. To address the second research issue, the detailed disaggregated data set of the 10 categories of public spending are re-group into productive and unproductive spending. A novelty approach employed by this study to test whether, support can be found for either of the two. This approach constitutes one of the new additions to the literature compare to past studies.

CHAPTER 3

3:   DEVELOPMENT OF PUBLIC SPENDING AND GLOBALIZATION MEASURES IN THE NORDIC COUNTRIES

This chapter looks at the distribution of disaggregated public expenditure categories as well as the dynamic trends in the globalization measures used in this study.

3.1: DISTRIBUTION AND TREND OF 10 DETAILED CATEGORIES OF PUBLIC EXPENDITURES

The Eurostat and OECD classify the government spending into 10 functional categories. This classification includes:

1)General public spending (GPS)

2) Defence (DEF)

3) Public order and safety (POS)

4)Economic affairs (ECOAFF)

5) Environmental protection (ENVIROP)

6)Housing & community amenities (HCA)

7) Health (HEA)

8)Recreation culture and religion (RCR)

9) Education (EDU)

10) Social protection (SOCP),

These disaggregated detailed data sets of the classification of public spending are available only from 1990. Table 1; in the appendix presents a general description of the data used in the study while table 2: shows all the 10 categories and their respective percentages share of general public spending of the whole sample from 1990-2007. Based on the table, health, education and social protection spending dominates all other categories of public spending in the Nordic countries.

Table 3 presents that of the individual member countries included in the sample. Though Sweden misses data for the first 4 years for the study period it still appears with the highest expenditure on education and social protection. In respect to the individual countries health spending, Norway put the highest share of its total general expenditures on health. Individual average spending on environment are below 1% of their general total expenditures except Denmark with average spending of 1.45%. Similarly spending on housing, community amenities by the individual countries and Nordic overall average are all below 1 % of the total general spending.

The area plot and trend of the development of the expenditures categories are illustrated in figures 1 and 2 in the appendix. Expenditures on health, education and social spending seem to be increasing rapidly in the four Nordic countries. The rising health expenditure might be due to the increase in the ageing population in the Nordic region, as the costs of health spending on the old keeps rising. The rise in educational and social spending may be as a result of increased immigrants from the enlarge EU member states, and other parts of the world due to globalization and their attracted welfare policies.

Though the above observation the average share of spending in some categories of the public expenditure shares in Nordic countries are very low. The overall trends on spending are positive. This is in line with Wagner's law that the share of public sector to Gross Domestic Product (GDP) increases over time (Hindriks and Myles, 2006). The overall increase in public spending may be supported by increased revenues from broadening tax bases (Devereux et al (2002); Klemn and Griffith (2004). This is in contradiction to the tax competition theory prediction of sub optimal provision of public spending, (Zodrow & Mierszkowski (1986).

3.2: GLOBALIZATION MEASURES

Three proxies out of many measures suggested in the literature have been employed here to assess the impact of globalization on public spending in the Nordic countries:

1) TRADE; measure the degree of openness to trade and constitutes the sum of imports and exports as a share of GDP.

2) **Foreign Direct Investment (FDI)**; The FDI measures the inward flow of foreign direct investment to the four Nordic countries used here in our sample (FDIinflow). The grossFDI measures the sum of absolute value of inflow and outflow of FDI as a share of GDP in the Nordic Countries. The index value of FDI is low in absolute terms and fluctuating.

 3)**Kofindex of globalization**: The kofindex of globalization as published by KOF Swiss Economic Institute was also used. This was originally developed by Dreher (2006) and has regularly been updated and calculated on yearly basis over the period 1970-2006,but the sample of index used for this current study starts in 1990. The kofindex measure globalization from 3 main aspects:–economic integration, political integration and social integration.

The three main dimensions of globalization are made up of six combined variables groups: actual flow of trade and investment, restriction of international transactions, variables measuring the degree of political integration, variables quantifying the extent of personal contacts with people living in foreign countries, those measuring trans-border flows of information and the proxy of cultural integration. This six groups sum up to form the three indices and one overall index of globalization, built with the help of objectives statistical method –same method was applied by Gwartney and Lawson (2001) in constructing the well known economic freedom index. It is the average of this overall kofindex that is used here as the most conventional proxy of globalization

Figure 3 in the appendix shows the percolation or gradual development of the globalization over the studied period from 1990-2007. Trade and kofindex gradually increase over time. The FDI indicator is split into inflow and the overall gross flow of investment. The FDIinflow capture the inward flow of investment to the region while the gross FDI tell us about the overall net FDI impact. This specific indicator is fluctuating as indicated in the graph. Since the measures of globalization are either increasing or fluctuating, it implies that they may have some effects on public spending of which only empirical investigations can help predict the outcome.

 Thus the overall increase in public spending in the Nordic may not be without the influence of globalization. A number of studies have attempted to investigate the threat of globalization

as well as economic integration on welfare states on a large sample of countries including the Nordic countries (Sinn, 2002, Tanzi, 2002, Hansson 2007). So far none of the past studies have actually focused only on the Nordic countries.

3.3: MOTIVATION OF CHOICE OF SAMPLE

Thus, the motivation for the sample of this study, originate from the fact that the Nordic countries as those nations with a large public sector. And who also imposed high tax rate in order to foster equitable income distribution, may be the society to be confronted first with the advent of globalisation. The choice of this sample is important for the Nordic countries, as past investigations have be done only on larger sample of countries as OECD countries, EU and on cross section of developing countries.

CHAPTER 4

4: METHODOLOGY

To examine how globalization influences the structure of the detailed composition of public spending, a statistical relationship is estimated using country –specific data on the sample of the 4 Nordic countries from 1990-2007. In this case each of the 10 categories (COFOG) of public expenditures have been regressed on variables measuring globalization as well as other covariate known to affect public spending.

The 4 Nordic countries used in this analysis are countries with different characteristics. Also not all important factors are measurable or observable to be included in the regression analysis; hence the fixed effects are relevant in the econometric model specification. Hence a panel nature of data employed control for the trends over time as well as controlling for country and time invariant factors, using fixed and random effects regression.

However considering that each of the 10 categories of expenditures composition in each of the independent Nordic countries affected by globalization might also depend on the composition in other countries. Hence specifying an econometric model or equation to measure these impacts of globalization on public spending could be deduced from a country's policy reaction function (Devereux et al, 2002), expressed as;.

$Y_{it} = R_i(Y_{-1,t-1,} X_{it})$ ……………………………………………………………………………..1

Where Y_{it} represents the respective expenditure category, $Y_{-1,t-1,}$ the vector of expenditure shares in the different countries of the sample (Finland, Denmark, Sweden, and Norway) at time $t-1$, X_{it} is a vector of control variables. Unfortunately the above reaction function in equation (1) cannot be estimated, given the low degree of freedom. Each Nordic country responds differently to the composition of public spending due to globalization that, which results in a large number of parameters' to be estimated. Hence in respect to the existing literature Devereux calls for a replacement of the vector $Y_{-1,t-1,}$ by the weighted averages.

$$A_{it} = \Sigma_{j\mp i} W_{ij} Y_{jt}$$

The appropriate choice of weights is the use of proximity or geographical weight, weight W_{ij} that is inversely related to the distance, between, jurisdiction i and j as suggested by Bruckner, (2000). The Nordic countries are close to each other, the issue of distance may be relevant, just as the relative size and the extent to which they are open to international flows. Hence this specific study of how globalization impacts the composition of the 10 categories of public spending uses trade shares as weights in the analysis. In similar studies with larger sample of OECD countries, Dreher et al, (2008) use trade share as weight but find no effects on the qualitative results.

4.1: MODEL SPECIFICATION

Specifying the empirical econometric model for this analysis where the government spending or expenditure responds slowly over time and the fact that expenditure categories are not independent, of each other is not so straight forward. A lagged dependent variable is included in the model, with it estimated parameter representing the speed-of-adjustment factor. On the whole the equations can be estimated as:

$$Y_{it} = \alpha_i + \beta_{it} Y_{it-1} + \theta_i G_{it} + \delta A_{it-1} + \eta X_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$

Where Y_{it} is the dependent variable that represents the respective expenditure categories, α_i is the country fixed effect. The parameter β_{it} is the coefficient of the lagged dependent variable known as the speed of adjustment parameter. The slowness in it responsiveness may

be due to the costs adjustment on the part of the private sector or the constraints by the interest groups (Devereux et al, 2002). Thus in interpreting the remaining coefficients of the explanatory variable of the above equation (2), we need to keep reflecting on this initial impact on the respective coefficient share. According to Dreher et al, (2008), the long-run effects in this model is given by the same coefficient divided by $(1-\beta_{it})$. The G vector represents our measure of globalization, A_{it} is the weighted average trade share of each Nordic countries, X_{it} is the vector of our control variables while ε_{it} is the error term. This model does not require country fixed period effects; since they are already present in the weighted average and lagged dependent variable (see Devereux et al, (2002) for details).

The dependence variable consists of the 10 detailed categories of public expenditures (COFOG) as named above. Though the 10 categories of public spending are dominated by health, education and social spending, the overall trends seem to be increasing.

With regards to our explanatory variables, except the constant and a lag variable describes, the main concern is the G vector that represents our measures of globalization For the three measures of globalization selected, trade and kofindex may be the most preferred measures due to their positive trends.

As for the other covariates or explanatory variables, known to affect the public spending categories, this paper consider the dependency ratio age below 15 and above 65 years known to positively raise public spending. In addition Government debt and lending rates are included as they have been found to directly affect government expenditure behavior. In previous work Lin, (1992), show the rate of inflation affect government spending as well. The level or the rate of unemployment increase may also affect public spending especially consumption and transfer. The change in GDP per capita that is based on Wagner's law that states the richer an individual become, the more will he/she demand of public services. Thus GDP per capita is considered here as one of the covariate factor and expected to affect spending in that respect. Real GDP will also be included where based on tax competition literature and the insight from the new economic geography, larger governments are expected to keep higher taxes and expenditures level than smaller countries (Hansson and OLofsdotter, 2004). The increase in government debt (Maastricht effects) and lending rate equally have

repercussion on public spending. The large influx of people from the enlarge EU new member countries and from developing nations as a result of the attractive social welfare policy in the Nordic countries may not leave public spending unaffected.

The weighted average variable A_{it} that measured the responds to changes in other countries policies enters the regression model with a lag. This is advantageous from a theoretical and econometric prospective as it permits estimation without instrumenting, the potentially endogenous contemporaneous average policy variables (Dreher, 2006). Thus the model implicitly control the serial correlation and heteroscedasity problem that may affect estimation result.

Equally, the individual detailed classifications of public expenditures mentioned earlier are not entirely independent of each other. There are some degrees of interaction effects between each expenditure categories but they however sum up to 100% of the total spending. Further the inclusion of the lagged empirical model implies that each equation has a different set of regressors. Consequently, estimating equation (2), using the seemingly unrelated regression (SUR), will be more advantageous over the classical OLS estimates. The SUR estimator permit non zero covariance between the error terms of the expenditure shares equation given room to better efficiency than the OLS estimate (BAUM 2006 & Verbeek, 2008). More over in case of a fixed budget, an adjustment in one expenditure categories come at the expense of a matched change in some other expenditure class. This indicates that the data of the model are drawn across the government budget. Still, other methodological problems for the inclusion of the lagged dependent variable and fixed country effects, is that the OLS estimator is biased and inconsistent in a short panel (Nickel, 1981) as reference by Dreher et al (2008). Hence applying a pooled OLS estimator in the dynamic model presented in equation 2, with lagged dependent variables included in the set of explanatory variables, may not be very appropriate. This may not only be caused by the over restriction that cause complicated error process as heteroskedasticity and serial correlation within the panel units, but because of the few number of individual unit (countries) in this study sample. This applies same to other panel models estimator as fixed and random effect which allow for heterogeneity across panel.

The SUR estimator is preferable in this case because of the few individual countries use in the analysis and the large or extended time period (T>N) and render a covariance matrix of a full rank. In addition, it allows cross equation restriction to be tested and result gaining efficiency, especially in this study that expect error terms across expenditure equations to be contemporary correlated.

Though, this study uses both OLS and the SUR estimator for the model to determine the effects of globalization in the Nordic countries, the SUR estimates are consider more efficient and preferable than the OLS estimates which may be biased.

4.2: EFFICIENCY AND COMPENSATION

This section describes how to test whether it is the efficiency or the compensating hypothesis that dominate public spending pattern due to globalization. This paper employs the same empirical method used by others studies. The only novelty in the approach is the re-aggregation of the 10 detailed spending classification into two major categories; productive and unproductive spending.

4.2.1: PRODUCTIVE AND UNPRODUCTIVE PUBLIC EXPENDITURES

The productive spending is expected to capture efficiency aspects (activities) while the unproductive spending explains the compensatory part. Classifying expenditures into these two groups will minimise the interaction effects that have been a problem in past similar studies.

The theory expects that if it is the compensation view that dominates policy spending decision in the Nordic country, then the globalization measures components will have a positive impact on the unproductive expenditure. That is, an expansion on social protection spending.

Unfortunately, classifying public spending into productive and unproductive spending is quite a complex and difficult task to implement. For instance, expenditures on social categories as unproductive may have some inherent quality of productive characteristics. Hence there is no orthodox way of disentangling expenditure into these two groups. However economists seeking to estimate the impact of public spending on economic growth have

attempted such classification. (e.g Kneller et al, (1999), Barro-i-Martin (1995) and Deverajan et al,(1996). See table 3 in the appendix for the classification). This work follows their categorization but it should be understood that the classification is far from perfect or standard. Even if we use the functions, purpose of public spending or even based on stochastic expectation, it may still be impossible to completely disentangle productive spending from unproductive in its entirety. Other empirical literature highlighting the distinction between productive and unproductive government spending include; Landau,(1983); Aschauer,(1989); Barro (1990, 1991) have indicated that output growth is negatively correlated with consumption spending (unproductive) and positive with public investments, (ibid). They are however consistent with the expectation of our model, where a positive globalization outcome with productive spending supports the efficiency hypothesis.

Equally, these classifications may differ from one society to the other as well as the level of development. Different outcomes are realized when the sample is restricted only to developing or developed countries (Deverajan et al, (1996). In the Nordic countries, where the welfare spending tendencies overwhelm public spending, expenditure on health may not be fully considered as productive spending. While in developing countries expenditures on merit and pure public goods may generally be aimed at improving investment and productive spending in particular. Such intricacy of distinguishing between productive and unproductive spending make it difficult to followed the same classification in this analysis. That explain why Deverajan et al, (1996), warn against using a priori classification of spending into productive and unproductive expenditures. This study therefore, further employed a sensitivity analysis to experiment the case of the Nordic countries. That takes into account characteristics of public spending in Nordic countries context. See the last 2 columns of table 4 in the appendix.

In this case, this work uses some average percentage weighting based on judgment of the compensation and efficiency qualities (characteristics) inherited by that specific category of public spending under examination. This will certainly shade some light to this second research question for some possible conclusion to be reached.

4.2.2: PURE AND MERIT GOODS.

Following Oxley & Martin (1991) and Saunders (1993);- classification of pure and merit class of public spending, this study has further attempted to investigate how globalization impact pure and merit goods categories, in the Nordic countries in particular using the same approach. Here general public spending, public order and safety and defense are classified as pure public goods while health, education and housing are grouped as merit goods.

In the final analysis two separate regressions of the model are run, one for public and the other for merit goods. Comparing the coefficient of the globalization influence on each of two regressions in order to predict which of the two goods dominate public spending.

4.2.3: SENSITIVITY ANALYSIS

The above classification of public spending does not adequately match with the goal or pattern of expenditures of the welfare states. This is because most of the welfare states considered in this study, gear their public spending at enhancing the welfare of its communities rather than on efficiency purposes. Hence to properly investigate the efficiency and compensatory hypotheses in the study area, a sensitivity approach is employed that to an extent takes into consideration the salient characteristics of public spending in the Nordic countries.

The sensitivity analysis by this study is still based on the pre-classification of expenditures into productive and unproductive group by Kneller et al (1999). The sensitivity analysis is performed by redistributing some of the expenditures categories using average percentage weights or ratios within each group as reflected by the expenditures structures in the Nordic countries. For instance, regards to the productive group of expenditure, expenditures categories such as general public services, defence, public order and safety, environmental protection, and housing and community amenities have all been fully weighted as 100% productive. Health and education are weighted on the ratio of 50:50 between productive and unproductive spending. See table 4 last two columns in the appendix. The reasons are that in the Nordic countries a larger fraction of their health expenditure is used in catering for their ageing population, who are more or less unproductive. The free educational policy in the Nordic countries attracted a large number of foreign students, expenditure on

such foreign students who are not retained by the end, render this category as partly unproductive spending. For the unproductive group of expenditure, this study also considers social protection spending to consist of both productive and unproductive expenditures. Social expenditures in the welfare state is on both risk and non risk activities (Hansson, 2007), thus the sensitivity analysis in this study considers this category of expenditure on a ratio of 50% productive and 50% unproductive. See table 3 for the suggested weights or ratios used in the sensitivity analysis. The new averages of the productive and unproductive expenditure are obtained, to run the regressions. Inferring from the two regression coefficients of globalization measures helps predict which of the two hypotheses dominates spending in the Nordic countries. The results of the above analysis are presented in the proceeding chapter.

CHAPTER 5

5: *PRESENTATION OF RESULTS*

5.1: *GLOBALIZATION AND THE 10 DETAILED CATEGORIES OF PUBLIC SPENDING*

Table 5 reports the results of the model estimates of Globalization on the 10 detailed categories of public expenditures from 1990-2007. The panel data set used was unbalanced since Sweden data misses observation for some few years of the expenditure variable. However running the regression with and without Sweden did not significantly alter the results. Hence the regressions were ran with an unbalanced panel, for the entire study period, with all countries in the sample included. In the tables presented in the appendix, only the results of globalization indicators of interest are reported. All other co-variates factors and base line variables have been left out and can be presented upon request. Thus, the table is a summary of the impact of globalization on each category of expenditures, when each globalization measure is inserted into the model at a time.

Though the model design for this analysis control for the problem of heteroscedasity and serial correlation, other diagnostic test as model specification test done with Ramsey reset test which failed to reject the model at 10% level of significant, other tests as endogeneity, autocorrelation, multicollinearity were all check and control, for the reliability of the OLS regressions.

Table 5a, show estimates of the OLS regression of the globalization measures. Trade as one of the measures of globalization, negatively affects defense spending, and housing, communities and amenities (HCA) at 1% level of significance. In addition, trade at 5% level of significance resulted to a reduction in public order and safety (POS), environmental protection (ENVIROP), recreation, culture and religion (RCR), health (HEA) and in education (EDU). The kofindex of Globalization recorded a negative impact at 1 and 5% level of significance on defence (DEF), economic affair (ECOAF), ENVIROP and HCA while the FDI did not significantly affect most of the expenditure categories except RCR

which is positively affected by FDI inflow at 10% level of significance and negative result on ENVIROP at same 10% level of significant caused by gross FDI.

The robustness of the results was further tested using the log transformation of those series expected to be skewed, though it reduces the number of observation as some expenditure shares sporadically turns to zero, but with no major effects noted on the result.

Applying the SUR estimator that favor this sample and it model specification, the SUR regression estimates are presented in table 5b and 5c in the appendix. Table 5b present a static model estimates without the lagged dependent variable. Table 5c show the dynamic model estimates of equation 2 with lagged dependent variable inclusive. Both results show almost a similar picture. As FDI persistently still proved to be an inappropriate measure to globalization while trade and kofindex exhibit significant influence on the different expenditure categories. The only difference between the estimates without a lagged dependence variable (table:5b) and the dynamic model with the lagged dependence variable (table:5c) is that trade and kofindex seems to significantly affect almost all the 10 expenditure share except social protection spending (SOCP). This in dynamic model is positively significant to both trade and kofindex. Though the speed of adjustment in the long run is slow, some categories of expenditures become insignificant as observe in table 5c in the appendix.

A correlation matrix of the residuals show a rejection of the independence of the residual series using the Breusch- Pagan test at 5% level of significant. A cross constraints test was further assess, it indicate some improvement or efficiency of the estimator as the value of the root mean square error increase slightly.

The only noticeable differences between the 2 estimators; OLS and SUR, are that the values of the parameter estimates in the OLS are biased downward and results to smaller estimates than the SUR in most cases. In addition, some expenditure categories level of significance changes or rather become insignificant under SUR. For instance, SOCP expenditures significantly increase with trade and kofindex of globalization while HEA, RCR, EDU and DEF become insignificant with trade.

However, since this study model specification favor a dynamic panel with the SUR as it suitable estimator, the result in table 5c with efficient estimates remains the source of inferences and conclusion of this aspect of analysis. In this respect, it is observed that trade and kofindex of globalization still remain the most significant measure used. They tend to significantly affect most of the expenditure categories than FDI (inflow and gross). Base on the SUR estimate in table 5c, FDI inflow affected spending on EDU and RCR only while the gross FDI reduces spending on HCA and ENVIROP. Only ECOAF, ENVIROP and HCA of expenditure shares results of trade and kofindex show some consistent result from the two estimators mentioned.

On average, trade significantly reduces expenditures on GPS, POS; ECOAF; ENVIROP and increase spending on SOCP at 1 and 5% level of significance respectively. Expenditure on DEF, HEA, RCR and EDU are not significantly affected by trade. Similarly, kofindex raises expenditure on social protection, and negatively affect DEF, ECOAF, ENVIROP and HCA, all at 1% level of significance.

The speed of adjustment coefficients though not reported is not only very low but also differ substantially across the expenditure categories. This slow responsiveness indicates the low rate of percolation of globalization in the region. This can be justified by the low coefficients of the parameter estimates shown in table 5a and 5c. The other co-variates (control) explanatory variables have diverse effect on each of the expenditure categories. Some recorded significant effects on some categories while insignificant outcome on other expenditure groups. The mentioned results have not been reported and can be presented upon request. However, the goal of this work is on how globalization affects the detailed 10 categories of public spending, hence the focus here is on the part of the results that contains globalization measures. One interesting issue worth discussing is that each measures of globalization tend to record different impact on different expenditure share. For instance FDI do not significantly influence most of the expenditure categories, while Trade and kofindex remain the most influential measures of globalization.

On the average for all our expenditure categories employed in this study, only ECOAF, ENVIROP and HCA have somehow a consistent trend in effects. Almost all of the 10

expenditure categories are affected by at least one of the globalization measures. For instance, from the SUR regression in table 5c, 15 out of the 40 regressions, globalization does significantly affect specific expenditure shares. Though with very negligible amounts, and without any consistency in the results, it is thus difficult to reach any robust conclusion that globalization has affected the shift in the detailed categories of public spending in the Nordic countries. From the slow speed of adjustment and the noted negligible impact on some of the expenditure share, it is possible to conclude that globalization do affect some of the expenditure share in the Nordic countries but not in a notable or significant pattern. This might in effect imply the Nordic countries might have been developing strategies that help mitigates the impact of globalization on their various spending composition.

Regression of total spending with globalization shows total spending to be positively significantly affected by trade. Kofindex and foreign direct investment have no significant impact on total spending

5.2: *COMPENSATION AND EFFICIENCY HYPOTHESES*

In order to investigate and determine which of these two hypotheses dominate public spending decisions in the Nordic countries, the 10 detailed categories of public spending have been re-aggregated into productive and unproductive spending as explained in the methodology section.

Table 6 in the appendix presents the results for the entire study period from 1990-2007. The results show that only trade and kofindex as globalization variables significantly affected productive and unproductive expenditures. Foreign direct investment (both inflow and gross) have no significant effect on both class of expenditure. Trade positively affects productive spending and negatively affects unproductive spending. Similarly the kofindex measure has same impact on productive and unproductive spending.

Smoothing the regression by taking the logarithms of both the dependent and independent variables did not greatly change the results presented in table 6 in the appendix. From the theoretical perspective a reduction in unproductive spending more than productive expenditures implies a support or domination of the efficiency view. While an increase in unproductive spending more than productive spending indicates a domination of

compensatory forces. Regards to this study, based on the exerted influence of trade and kofindex as globalization measures, the outcome is that the efficiency hypothesis exerts great influence in public spending decision in Nordic countries.

This inferring conclusion that supports the efficiency view may be questionable or contradictory in this case of the Nordic countries. They are nations with large share of public spending, and pay more attention on welfare or social protection than the capitalist countries. Equally, because of the complexities of classifying public spending into productive and unproductive categories, that failed to take into account, the spending government behaviour or target as in the Nordic countries. For instance, in the current classification health expenditure is bundled into productive spending, but in fact, a good percentage of health income is destined in catering for the ageing people which is unproductive, similarly social spending consists of expenditure that finance both productive and unproductive activities. Hence a sensitivity analysis that takes into consideration to some extent the specific characteristics of spending in the region may yield a better outcome to the issue at stake. However, before proceeding to the sensitivity analysis as an alternative approach to the above finding, the study equally finds it necessary to further examine how globalizations affect pure and merit goods categories of public spending.

5.3: RESULT OF PURE AND MERIT GOODS REGRESSION

Following Oxley and Martin, (1991) and Saunder, (1993) classification of some of the detailed categories of public expenditures, into pure public goods and merit goods (see Gemmell et al (2006)). This study also uses their classification previously highlighted in chapter 4, to investigate how globalization actually affected spending on pure public goods and merit goods in the Nordic countries. The result of the empirical estimation indicated a positive and significant impact on merit goods when assessed by trade and kofindex as globalization measures over the entire study period from 1990 to 2007.

Taking logarithms of the series expected to be skewed, in respect to individual general expenditure shares and those as a share of GDP to further confirmed the result leave the results unaltered. In addition, to some diagnostic tests performed and the ability of the model

specification to content the problem of serial correlation and endogeneity, do credit the reliability of the estimates.

5.4: RESULTS OF SENSITIVITY ANALYSIS

The results presented in table 7 in the appendix have taken into consideration some of the salient characteristics of Nordic countries general public expenditure. The result has been built from the pre- classification of expenditures into productive and unproductive framework of Kneller et al (1998). As already described in the methodology chapter, the health, education and social protection spending as largest share of public spending, have been re-weighted or distributed on a ratio of 50:50 between productive and unproductive spending. This alters the original classification aggregate value of productive and productive expenditure. Regression on this sensitivity estimates when exposed to globalization measures, yielded to the results presented in table 7.

The results show trade and kofindex as globalization measures significantly affect productive expenditures again in a positive direction. The unproductive regression now becomes insignificant to all the globalization measures. On the whole, trade and kofindex in respect to globalization increase public spending on productive activities. Thus considering that there is only one fiscal budget at a time, this increase implies reduction in social or unproductive spending. This further strengthens this study support to the efficiency hypothesis. Though the increase in productive spending as observed is very insignificant, which is an indication that reduction in unproductive expenditure is likely to be relatively small, it implies social protection forces have not completely been overshadowed by globalization.

Theory of the two hypotheses says that a reduction in unproductive spending more than productive expenditures implies support or domination of the efficiency view. From the above analysis of the compensation and efficiency, as well as the result of the sensitivity analysis of public expenditure and globalization in Nordic countries, that is in favour of efficiency hypothesis. It is still difficult to agree with this evidence that the efficiency view dominates public expenditures decision in Nordic countries. This outcome seem opposing to the philosophy of most Nordic countries as welfare states. However, the value impacts that

favour the prevailing efficiency are very small or somehow negligible. It may be an apparent indication of the gradual opening up of the Nordic countries economy to the rest of the world today as result of globalization

5.5: DISCUSSION OF THE RESULTS

Judging from the result presented, it is clear that globalization affected some of the expenditure categories, though not in a very notable manner. On average from the SUR regression table in the appendix, 15 out of the 40 regressions, globalization does significantly affect certain expenditure shares. This is because the impact to each of the 10 expenditures seems to vary with each of the globalization measures used. Evaluating the measures, trade and kofindex appear to be better measure of globalization than foreign investment measures. In Nordic countries, trade and kofindex on average have been steadily rising since 1990; rendering them vital measures of globalization (see fig. 3 in the appendix). Restricting the globalization measures of this thesis to trade and kofindex, it will be explicit concluding that, its affect 50% of the categories of public spending. Foreign investment seems to be a poor measure of globalization specifically in the Nordic countries. This may not only be caused by the missing data records on foreign investment realized during the data collection process, but also due to the low and unstable investment flow in and out of the Nordic countries. The enlarged high tax scales of the Nordic countries may have also acted against foreign investor desire to invest in this area of study. Thus, making foreign investment (inflow and the gross) a poor measure of globalization. Base on this analysis, the prevailing result of how globalization affected the 10 categories of public expenditures presented above can be easily stated.

The result shows trade to significantly reduce expenditures on GPS, POS; ECOAF; ENVIROP and increase spending on SOCP at 1 and 5% level of significance respectively. Expenditure on DEF, HEA, RCR and EDU are not significantly affected by trade. Similarly kofindex raises expenditure on social protection, and negatively affect DEF, ECOAF, ENVIROP and HCA, all at 1% level of significance. The negative impact result realized on some of the mentioned public expenditures share in the Nordic countries may not be consistent with past studies that have used dis-aggregated data similar to this study. This is

because most of the past studies have been done only with larger sample as OECD countries, focusing only on few categories of public spending, especially social expenditure. Dreher (2008) find insignificant results on most of the 10 categories of public expenditures in OECD countries. The Nordic countries with large public sector, and high tax rates are therefore, expected to be affected first by globalization.

The realized finding of positive impact of globalization on social spending category by this thesis is however consistent with past studies outcomes (Huber et al (1993), Garrett (1995), Cusack (1997), Rodrik (1998)). Though these studies focus only on large sample and did not consider all the 10 categories of public spending, but their finding do concord with those of this study. This is because the increases in ageing population and migration, which may have increase social spending, are also issues in Nordic countries. In addition, the decrease in the level of significant of the estimated parameters of static and lagged dependent variable, may indicate the capability of the Nordic countries governments to resist or mitigate the effect of globalization on their economies over time.

However, the results of how globalization affects the categories of public spending so far are not the best. Is strength that each of the three measures of globalization expected to yield similar results, resulted to different impacts on the each categories of expenditure in some cases. Is difficult to predict if such result can be attributed to error in the method used, failure to consider the political factor effects in the analysis. Considering that political decision (regime type, as left party government, election year etc) play a very big role to globalization influence in the economic. Such noted discrepancy from this result may be left for future investigations. Which may either contradict or confirmed the finding of this paper.

In respect to the second research question, based on trade and kofindex as measures to globalization, this study find a consistent result that favors the efficiency hypothesis over the compensatory hypothesis. The method of aggregating the different public expenditure categories into productive and unproductive and use of sensitivity study are new to those employed by other studies. In spite the complexities of the two approaches use to obtain the final result, the result is however valid to other study findings that have used different methods on large sample..

The slight adherence of the efficiency hypothesis over the compensation hypothesis may be controversial to the expectation of the Nordic countries as the welfare state. The expectation is that as welfare states, they should spend more on social activities than the capitalist countries. Thus, with the threat of globalization, the compensation spending should dominate the productive or efficiency spending. This argument does not in any way invalidate or make the findings of this thesis wrong on this issue. The practical implication of the result in regard to the Nordic countries implies, they are gradually reducing the increasing social protection (unproductive) spending in favour of productive spending. This may be in order to attract more foreign investment into the Nordic countries and to withstand the globalization competitive pressures faced within their economic integration zone and also for long run growth sustainability. The efficiency directions of spending have implication on economic growth. The composition of government spending has been found to be vital in determining an economy's long term growth (Devararajan et al (1996) & Kneller et al (1999). For instance Kneller et al (1999) finds growth in OECD countries has been enhanced where greater productive public spending has been financed by taxes that are least distorting towards investment. However, FDI that encourages non productive public spending could be harmful to long run economy growth.

Even though the results of this study seem to be in-line with other studies, the use of more modern econometric techniques is recommended. Further research that attempt to investigate this research question, by employ this new approach of separating public expenditure into productive and unproductive spending, should do so by considering each public spending category individually. Evaluating with detail, follow proper cost and benefit techniques may yield clearer result than those realized here so far.

From the discussion of the results of this study, though with limitations, it is possible to acknowledge that the Nordic countries have not been entirely free from the threat of globalization. Globalizations have rendered them to be more productive but not completely at the detriment of their social policy

CHAPTER 6

THE CONCLUSION

The use of disaggregated detail public expenditure data to investigate the impact of globalization on the Nordic countries from 1990 to 2007, propose quite different impacts on the composition of the 10 expenditure categories under examination. In fact, the globalization measures were found not neutral to all the expenditure categories. For the three measures used to capture the impacts of globalization, trade and kofindex were found to be the most influential measures. Apart from the economic affairs (ECOAFF); Environmental protection (ENVIROP); housing and community amenities (HCA); and Recreation, culture and religious (RCR) share of expenditures that maintain significant results from the two estimators OLS and SUR., no other expenditure categories exhibit consistent results. On the whole, just an approximate 36% of the total regressions affected public spending composition. Base on our SUR estimates, trade and the kofindex of globalization on average affected some of the composition of public expenditure shares. However, without any clear pictures and consistency in the result it is difficult for this study to made any robust conclusion that globalization significantly affected all the 10 detailed categories of public spending in the Nordic countries. It however affected some categories of public expenditures in the Nordic countries.

However, globalization positively affects the merit categories of public goods as measured by trade and kofindex and reduce spending on pure public good categories.
The new approach of aggregating the 10 categories of expenditures into productive and unproductive spending is to investigate the influence of globalization, in respect to the compensation and efficiency hypotheses, in the Nordic countries. Compensation hypothesis which argues that globalization leads to pressure on governments to expand public expenditure, specifically by increasing expenditures on social protection. On the contrary the efficiency hypothesis, argues that competition between countries to attract FDI leads to a reduction in the size of public sector (via tax constraints), in favour of restructuring of

composition of government expenditure towards productive inputs. This paper finds some slight adherence of the efficiency hypothesis over the compensation hypothesis on the mix of spending in the study area.

However, due to the complexities of decomposing public spending into the two major categories of expenditures this study further employ a sensitivity analysis. A sensitivity study, that takes into consideration some characteristics of public spending in the Nordic countries. The result of the sensitivity regression still finds support in favour of the efficiency hypothesis in respect to trade and kofindex measures of globalization. Though, such a sensitivity resulting outcome cannot be truly reliable when based on random weighted proportion of spending. A detail cost benefit analysis of each of the expenditure categories of governments' public spending study can give more reliable prediction than this. However, with such result confirming that of the previous outcome, this study thus concludes that efficiency hypothesis overshadow compensation hypothesis in respect to public spending in the Nordic countries. Further research may be relevant for confirmation of this view in the Nordic countries.

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APPENDIX

TABLE :1 GENERAL DATA DESCRIPTION

Data description

VARIABLE	DESCRIPTION	SOURCE	MEAN	STANDARD DEVIATION
General public Expenditure(GPS)	Expenditures on general services. Data are Shown for general government as % of total expenditure	Eurostat	3.1	1.8
Defence	Expenditure on defence. Data are in % of total exp.	Eurostat	2.6	1.6
Public order and safety (POS)	Expenditure on POS. Data are shown for general government as % of total exp,	Eurostat	1.5	0.87
Economic affairs(ECOAF)	Expenditure on ECOAF. Data are shown for general government as % of total exp.	Eurostat	2.6	1.7
Enviromental protection (ENVIROP)	Expenditure on ENVIROP. Data are shown for general government as % of total exp	Eurostat	0.25	0.19
Housing and Communities amenities (HCA)	Expenditure on HCA. Data are shown for general government as % of total exp	Eurostat	0.26	0.21
Health (HEA)	Expenditure on health. Data are shown for general government as % of total exp	Eurostat	8.5	4.7
Recreation, culture and Religion (RCR)	Expenditure on RCR. Data are shown for general government as % of total exp	Eurostat	1.1	0.60
Education (EDU)	Expenditure on EDU. Data are shown for general government as % of total expenditure	Eurostat	7.44	4.05
Social Protection (SOCP)	Expenditure on SOCP. Data are shown for general government as % of total expenditure	Eurostat	5.5	3.2
General total	Sum of the above first 10	Eurostat	33.10	17.8

expenditure	variables. Data are expressed as % of general government expenditure.			
GDP per capita	Annual change in real GDP per capita. PPP adjusted	OECD, economic outlook.	27278.4 m. euro	7956.2
Unemployment rate	Unemployment in % of labour force	WDI	6.9	3.2
Dependency ratio	Number of people above 15 or above 65 in the % of total population	WDI	33.7	4.2
Inflation	Inflation growth in GDP	OECD facts book	2.3	2.6
Lending rate	The rate charge by banks on prime clients	OECD Economic outlook	7.8	3.1
General government debt	Is the gross amount of government liabilities, not reduce by it claim against others. Measure as a % of GDP.	WDI	54.1	17.6
Net migration	Net of in and out migrants from Nordic countries. Measure as a % of total population.	OECD Economic outlook	2.3	1.5
Trade	Sum of imports and exports of good s and services measures as a share of GDP	OECD	73.2	14.1
Kofindex	Index constructed with principal components. It analysis comprise 23 variable measuring globalization.	Dreher (2006)	82.7	5.10
FDI inflow	Inward direct foreign investment into a country from the rest of the world.	OECD	4.02	4.2
Gross FDI	Is the sum of absolute value of inflows and outflows of foreign direct investment recorded in the BOPs. Consist of equity capital, reinvestment of earnings, other long and short term capital etc. Data are in % of GDP:			

Figure 1: Development of average expenditure share of the 4 Scandinavian countries. Source: Eurostat data base (COfOG) detail classification of expenditure. Data ordered in respect to the percentage of the general expenditures.
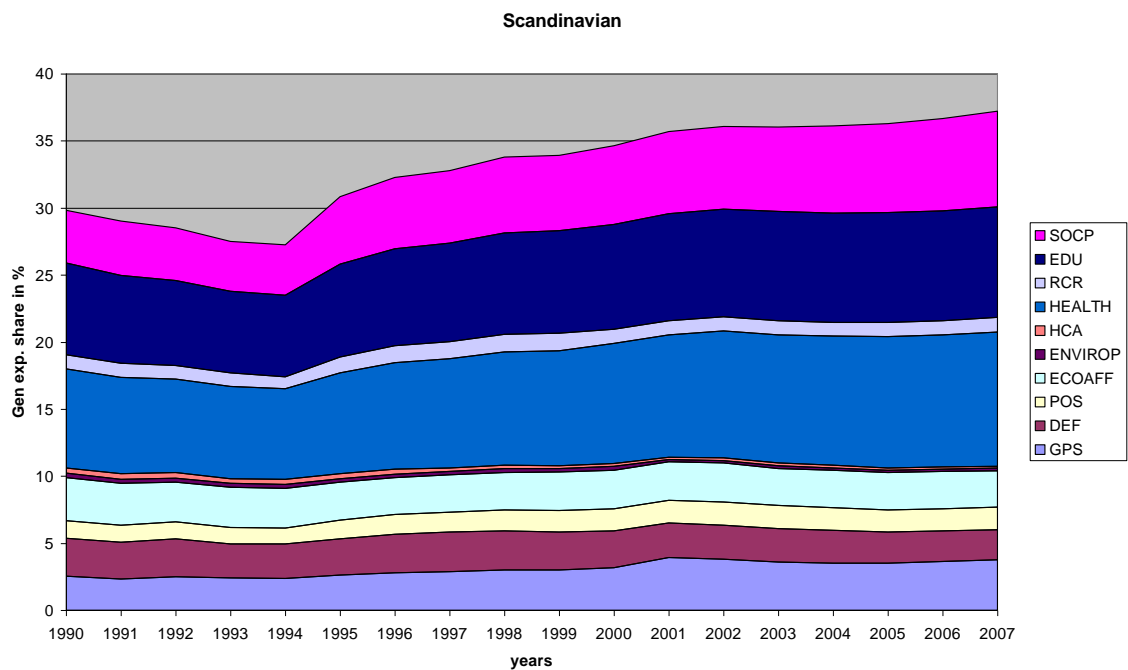
.
1)   GPS – --------General public spending.
2) DEF—----- -- Defence
3) POS—------- -Public order and safety
4) ECOAFF-----Economic affair
5) ENVIROP---Environmental protection
6) HCA-------- - Housing, communities and amenities.
7) HEALTH---- Health
8) RCR---------Recreation, Cultural and religion
9) EDU---------Education

10) SOCP------Social protection

Figure 2; Average development trend of the ten expenditures shares in the Scandinavian from 1990 to 2007.
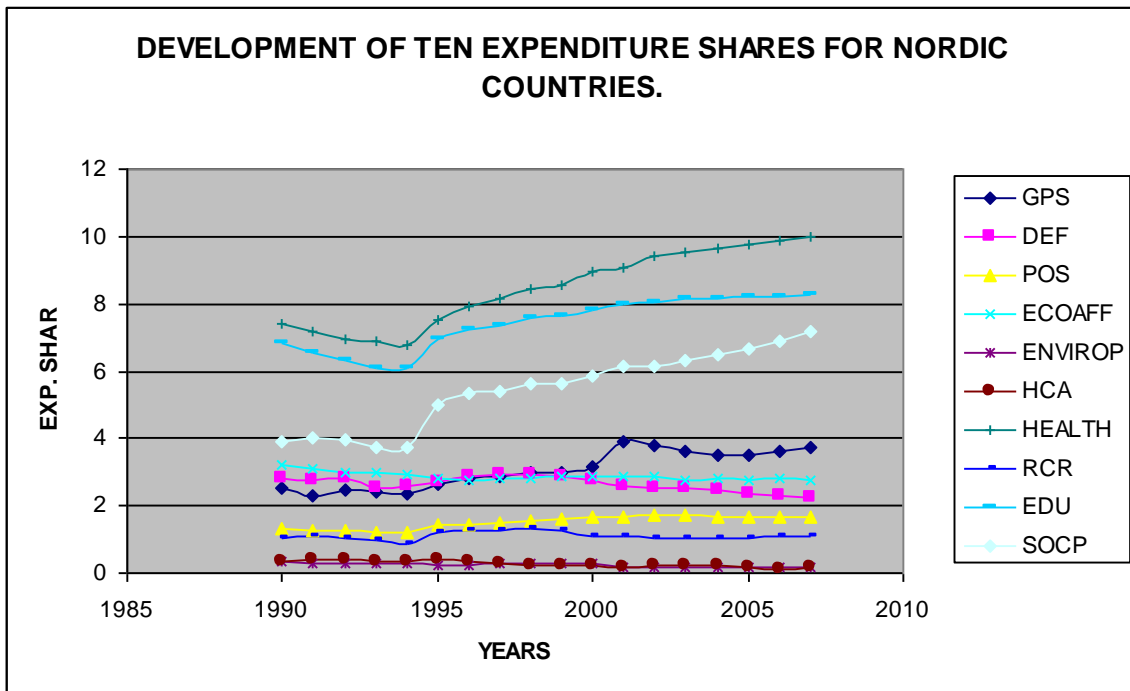
DEVELOPMENT OF TEN EXPENDITURE SHARES FOR NORDIC COUNTRIES.

1)   GPS – --------General public spending.
2) DEF—----- -- Defence
3) POS—------- -Public order and safety
4) ECOAFF-----Economic affair
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7) HEALTH---- Health
8) RCR---------Recreation, Cultural and religion
9) EDU---------Education
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Figure 3: Globalization average development indicator (1990-2007) Data source: WDI, OECD, and Dreher (2006):www.kof.ethz.ch/globalization

fig.3 Average development of globalisation indicators in Nordic countries (1990-2007)

1) GPS – --------General public spending.
2) DEF—----- -- Defence
3) POS—------- -Public order and safety
4) ECOAFF-----Economic affair
5) ENVIROP---Environmental protection
6) HCA-------- - Housing, communities and amenities.
7) HEALTH---- Health
8) RCR---------Recreation, Cultural and religion
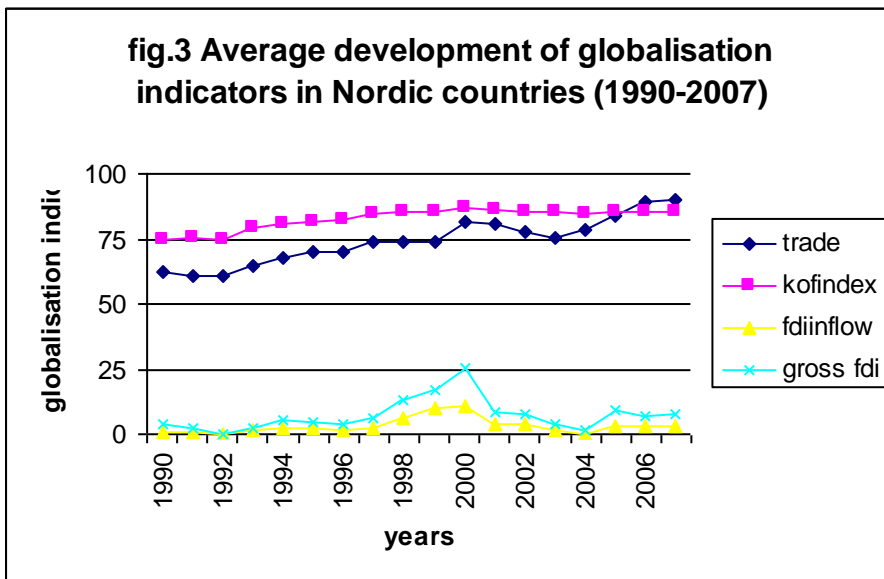9) EDU---------Education
10) SOCP------Social protection

Table 2: Average percentage for each categories of general public spending for the Nordic countries.

Expenditures categories	% of general spending
1) General public spending (GPS)	9.3
2) Defence (DEF)	7.96
3) Public order and safety (POS	4.58
4) Economic affair (ECOAF)	8.71
5) Environmental protection (ENVIROP)	0.74
6)Housing communities and amenities (HCA),	0.83
7) Health,	25.59
8) Recreation, Culture and religion (RCR),	3.33
9) Education (EDU)	22.41
10) Social protection (SOCP)	16.49

Table 3: Average share of individual countries spending of the ten expenditures groups from 1990 to 2007   as a percentage of general expenditure

	Denmark	Finland	Sweden	Norway
CATEGORIES OF SPENDING				
1) General public spending (GPS)	7.00	10.80	9.12	8.48
2) Defence (DEF)	6.45	6.73	7.25	9.60
3) Public order and safety (POS	3.34	5.11	4.77	4.55
4) Economic affair (ECOAF)	8.11	10.75	5.94	8.53
5) Environmental protection (ENVIROP)	1.45	0.77	0.23	0.96
6)Housing communities and amenities (HCA),	0.49	0.98	0.63	0.78
7) Health,	25.28	24.32	23.38	28.26
8) Recreation, Culture and religion (RCR),	4.55	3.27	3.62	3.05
9) Education (EDU)	22.8	21.49	23.38	22.69
10) Social protection (SOCP)	20.52	16.19	21.4	13.48

Source: Author calculation.

.

Table 4: Classification of government expenditure by function

COFOG CLASSIFICATION	Kneller et al (1998)	This study classification	Nordic Classification (%)	
			Pdtive	unpdtive
Genenral public services (GPS)	Productive	Productive public spending	100	0
Defence (DEF)			100	0
Public Order and Safety (POS)			100	0
Economic Affairs (ECOAF)			100	0
Housing and Community amenities.			100	0
Health			50	50
Education			50	50
Recreation, cultural and religion	Unproductive	Unproductive	100	0
Social protection			50	50
Other economic services			0	0
Enviromental protection		Productive spending	100	0
Other non classified function			0	0

NB Pdtive=productive expenditure,

Unpdtive= unproductive expenditure.

Table 5a: OLS Regression results for the 10 categories of spending and globalization.

	GPS	DEF	POS	ECOAF	ENVIROP	HCA	HEA	RCR	EDU	SOCP
trade	-.O04 (-.034)	-.O44 (-5.4)*	.004 (-1.94)	-0.054 (-6.03)*	-0.004 (-3.63)**	-0.008 (-6.8)*	-0.045 (-2.0)**	-.011 (-3.4)**	-.042 (-2.3)**	.005 (.26)
kofindex	.007 (0.22)	-.077 (-4.5)*	-.002 (-0.24)	-0.072 (-2.8)**	-.108 (-3.3)**	-.017 (-4,3)*	-.02 (-0.40)	-.012 (-1.32)	-.024 (-.46)	.005 (0.43)
FDIinflow	-.012 (-.64)	-.017 (-1.2)	-.004 (-.43)	-.019 (-.89)	-.003 (-1.29)	-.003 (-.92)	-.024 (-.61)	.013 (1.8)***	.012 (-.32)	.013 (.33)
grossFDI	-.009 (-.98)	-.012 (-1.57)	.001 (-.33)	-.012 (1.82)	-.003 (-1.87)***	-.003 (-1.29)	-.014 (-.65)	.003 (.91)	-.008 (-0.38)	.018 (0.78)

Results for the Globalization variables of the 3 different system of equations, though 4 here because of split of FDI variable into inflow and gross. Absolute t-statistics are in parentheses.*,**, *** indicates significant at 1%,5% & 10% levels, respectively. Fixed country effects are included.

TABLE 5b: SUR REGRESSION RESULTS WITHOUT A LAG DEPENDENCE VARIABLE OF EXPENDITURE AND GLOBALIZATION.

	GPS	DEF	POS	ECOAF	ENVIROP	HCA	HEA	RCR	EDU	SOCP
TRADE	-0.04 (-2.9)*	-0.07 (-12.0)*	-0.02 (-3.9)*	-0.07 (-9.9)*	-.008 (-6.9)*	-0.01 (-8.04)*	-0.17 (-7.4)*	0.02 (-5.4)*	-0.11 (-5.2)*	0.014 (-0.63)
KOFINDEX	-0.08 (-2.4)**	-0.17 (-8.3)*	0.05 (-3.6)**	-0.16 (-6.7)*	-0.014 (-3.35)**)	-0.02 (_6.7)*	-0.37 (-6.2)*	-0.05 (-5.36)*	-0.27 (-5.36)	-0.08 (-1.44)
FDIINFLOW	0.00 (0.01)	-0.03 (-1.13)	-0.00 (-0.13)	-0.02 (-0.84)	-0.006 (-1.7)***	-0.005 (-1.12)	-0.09 (-1.4)	0.009 (0.86)	-0.03 (-0.59)	0.032 (0.65)
GrossFDI	-0.01 (-0.34)	-0.02 (-1.52)	-0.00 (-0.25)	-0.02 (-1.23)	-0.004 (-2.08)**	-0.003 (-1.7)***	-0.06 (-1.8)***	0.001 (0.30)	-0.023 (-0.77)	0.02 (0.71)

z- statistics are in parenthesis, * and ** indicates the level of significant at 1% and 5% level of significant respectively, while *** indicates a 10% level of significance.

Table 5c: SUR REGRESSION DETAILED CATEGORIES OF EXPENDITURES AND GLOBALIZATION.

	GPS	DEF	POS	ECOAF	ENVIROP	HCA	HEA	RCR	EDU	SOCP
Trade	-0.04 (-6.14)*	0.00 (.02)	-0.034 (-4.06)*	-0.038 (-4.39)*	-0.006 (-4.46)*	0.005 (-4.26)*	-0.029 (-1.53)	-.005 (-0.13)	0.009 (0.49)	0.058 (2.95)**
kofindex	0.008 (0.40)	-0.08 (-2.12)*	0.01 (1.08)	-0.041 (-2.26)*	-0.012 (-3.86)*	-0.011 (-3.75)*	.009 (-0.23)	0.005 (-0.07)	0.021 (0.53)	0.14 (3.16)*
FDIinflow	-0.007 (-0.69)	-0.010 (-.79)	0.007 (0.002)	0.008 (-1.12)	-0.003 (-1.41)	-0.002 (-1.38)	-0.02 (-.71)	-0.025 (-7.2)*	0.016 (2.1)**	0.026 (1.29)
GrossFDI	-0.00 -(0.9)	-0.01 (-1.6)	-0.00 (-0.07)	-0.01 (-1.5)	-0.003 (-2.1)**	-0.003 (-2.3)**	-0.01 (-0.43)	-0.01 (-.14)	0.002 (0.14)	0.021 (1.25)

z- statistics are in parenthesis, * and ** and *** indicates the level of significant at 1% , 5% and 10% level of significant respectively

Table 6:productive and unproductive spending regressions.

	PRODUCTIVE SPENDING	UNPRODUCTIVE SPENDING
TRADE	0.0905 (3.47)**	-0.025 (-2.07)**
KOFINDEX	.0938 (2.27)**	-0.0347 (1.79)***
FDI(INFLOW)	-0.0229 (-0.06)	-0.0129 (-1.01)
GROSS FDI	-0.016 (-1.06)	-0.006 (-1.01)

The z- statistics are in parenthesis, * ,**, and ***, indicates 1%,5% and 10% level of significance.

Table 7: sensitivity regression

	PRODUCTIVE SPENDING	UNPRODUCTIVE SPENDING
TRADE	0.0631 (2.91)**	0.0059 (0.58)
KOFINDEX	0.0578 (1.82)***	0.0121 (0.53)
FDI(INFLOW)	-0.0201 (-0.87)	0.0155 (-1.04)
GROSSFDI	-0.0140 (-112)	-0.009 (-1.13)

The t- statistics are in parenthesis , * ,**, and ***, indicates 1%,5% and 10% level of significance.